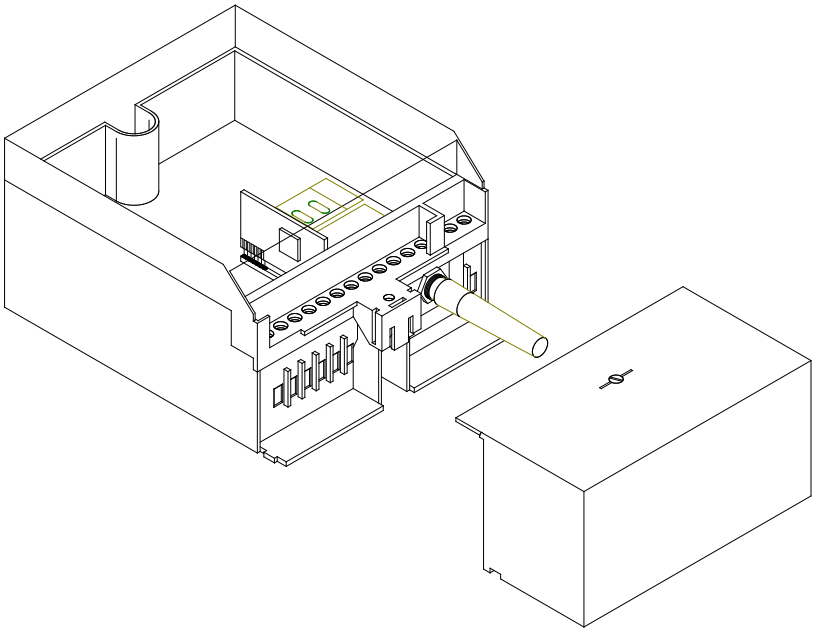
# UniMod GSM-4

Modem

User Manual E109211215063



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# 1 General

The world-wide GSM radio networks (GSM = Global System for Mobile communication) provide besides digital voice communication the possibility to transmit data. In this operation mode it is possible to send fax, data (CSD: Circuit Switched Data connection), GPRS: General Packet Radio Service) and short messages (SMS). The universal radio modem UniMod GSM-4 is supposed for remote inquiry of measurement data of any kind, especially however for telecounting applications.

The UniMod GSM-4 supports in the operation mode GPRS the meter data communication according to DIN 43863-4 (IP-Telemetry).

## 1.1 Requirements

The UniMod GSM-4 can be used in any EGSM 850/900/1800/1900 MHz network with an arbitrary number of providers. It requires however the infrastructure for operating mobile stations with 2 Watt (Class 4; 850/900 MHz) or 1 Watt (Class 1; 1800/1900 MHz) transmission power. The modem supports an interface for 3V Mini-SIM-Cards. For communication a Mini-SIM-Card with call number for 9600 Baud transmission is needed.

For the UniMod GSM-4 communication modules produced by internationally renowned companies are used. These companies update their software packages regularly and add or change features. The software releases are continuously checked by the development department, but no responsibility for this software releases can be taken over except of warranty granted by the module producer.

# 2 Safety Precautions for the User

## Aircraft safety

Cellular engines can interfere with an aircraft's navigation system and its cellular network. The use of UniMod GSM-4 on board aircraft is forbidden by law. Failure to comply with this prohibition may lead to temporary suspension or permanent cancellation of cellular engine services for the person who infringes this prohibition and/or to legal action against said person.

## Environments with explosive substances

a) Users are advised not to use the device in automotive service stations.

b) Users are reminded of the necessity to comply with restrictions regarding the use of radio devices in fuel depots, chemicals plants and locations where explosives are ignited.

## Non-ionising radiation

As is the case with other mobile radio transmitters, operating personnel are advised to use the device in the normal operating position only in order to ensure optimum performance and safety. Avoid touching the antenna.

## Personnel

Installation and repairing should be done by experienced personnel only.

## Connecting to other devices

In order to connect the UniMod GSM-4 to another device please read the device's operation manual to obtain detailed information about safety. Don't connect devices, which are not approved by manufacturer.

## Precautions in the event of loss/theft of the Cellular Engine and the SIM-Card

If your UniMod GSM-4, your SIM-Card or both go missing, notify your network operator immediately in order to avoid misuse.

# 3 Power Supply Unit

The modem is equipped with a built-in, low-loss switched power supply, which enables it to operate on a wide-range AC or DC supply voltage.

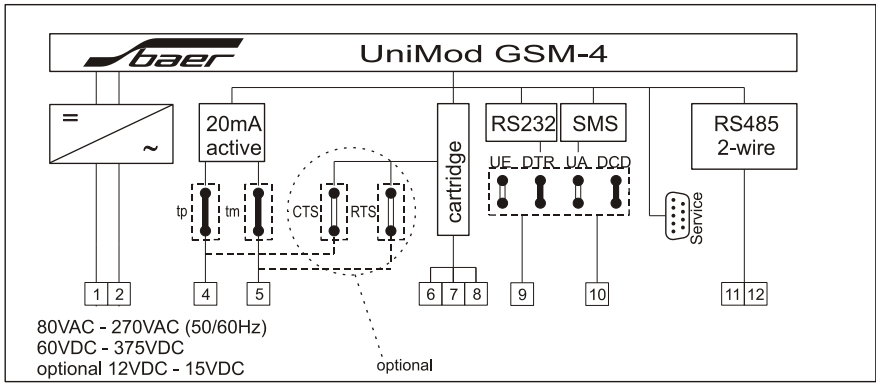
- 80VAC to 270VAC (50/60Hz) or 60VDC to 375VDC
- alternative (with additional board): 10VDC to 36VDC (0,8A)
  or 20VDC to 72VDC

| 80VAC to 270VAC / 60VDC to 375DC | 10VDC to 36VDC |
|---|---|
| | |

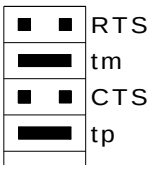
**Attention: <u>NEVER</u> remove the interface modules or the SIM-Card when the device is powered! The card and especially it's contact pads can be damaged very easily by scratches or bending. Be careful when inserting or removing it.**

# 4 Interfaces

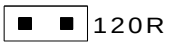
Communication is possible with many standard protocols, like SCTM, LSV1, DLMS, IEC1107 / IEC62056-21, IEC60870, M-Bus, Modbus (transparent reading).



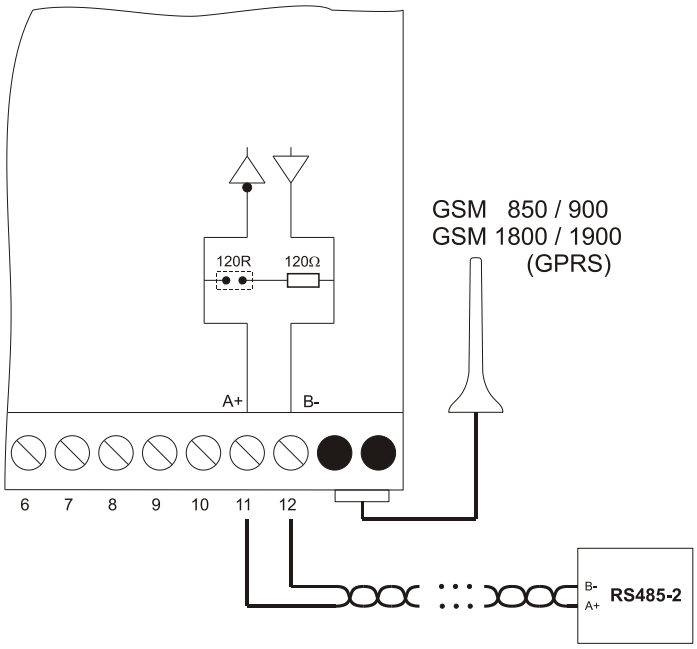

The following internal (on-board) interfaces in UniMod GSM-4 are available:




**20mA** (CS, current loop) active for 4 devices max.
Can be enabled via jumpers „tp“ and „tm“. This interface supports “echo suppression” and can be operated without load (terminal open).

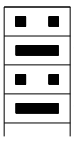



**RS485** (2 wires).
Using the UniModSet program the user can determine the functionality of the RS485 interface (2-wire or disabled). Set the “120R” Jumper for activation the 120 Ohm termination (if necessary).

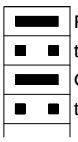



**RS232** (RxD, TxD, DTR, DCD, GND); for service only
RTS and CTS bridged;

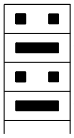
In the UniMod GSM-4 modem an additional slot is available for another interface module. For this slot the following module types are available (installation: see page 32):



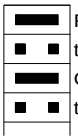

**20mA** (CS, current loop) active (for 4 devices max.) or passive;
if the 20mA interface is active it must be operated either with a load or its terminals must be short-cut.



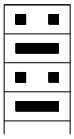

**RS232** (RxD, TxD, CTS, RTS, GND);
If RTS/CTS lines are used, the internal 20mA interface must be deactivated. (Set jumper “RTS” and “CTS” instead of “tm” and “tp”.)




**RS485** (2 wires);



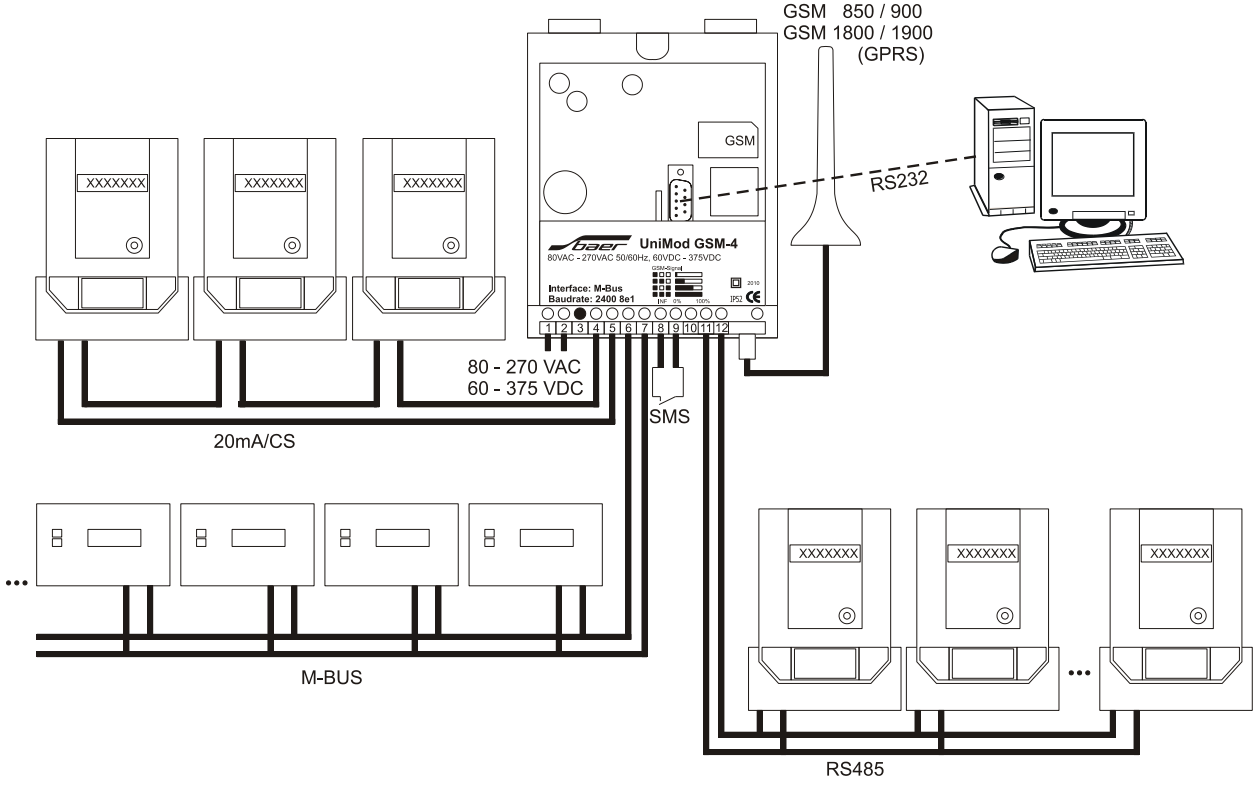

**RS485** (4 wires);
When the 4-wire interface is used, the internal 20mA interface must be deactivated. (Set jumper “RTS” and “CTS” instead of “tm” and “tp”.)



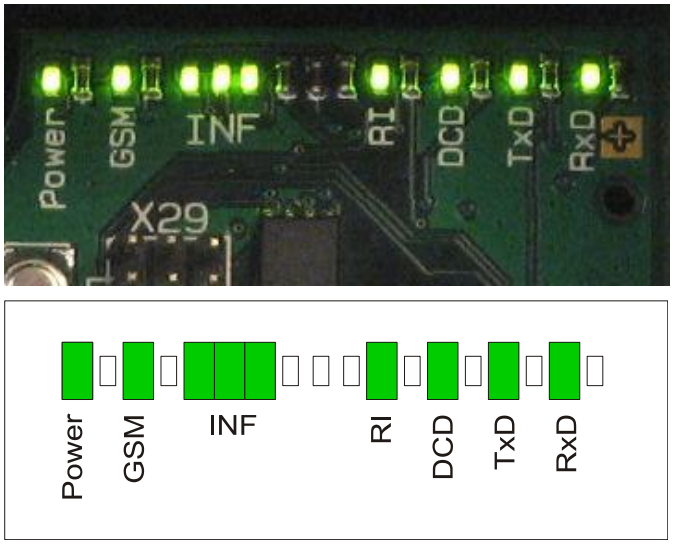

**M-Bus** active (for 10 or 25 devices max.);

**Please note: All interfaces are internally connected with each other. Therefore all attached devices receive the same data from the interface. It must be ensured that never two or more devices send data at the same time.**

Example demonstrating different kinds of connection:



# 5 Display







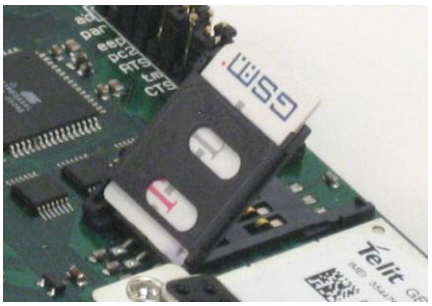
Some of LED's display the current operating status of the modem and give information about the data transfer

- **Power** signals, that the modem is supplied with power.
- **GSM** - permanently off: power down mode
  - 500 ms on / 500 ms off: Limited Network Service: No SIM-Card inserted or no PIN entered, or network search in progress, or ongoing user authentication, or network login in progress
  - 300 ms on / 2,7 s off: IDLE mode: The mobile is logged to the network (monitoring control channels and user interactions); no call in progress
  - permanently on: CSD call: Connection to remote party
- **INF** Information: 3 LEDs showing processor status and field strength. **Modem is ready for programming, data transmission and call answering not before the leftmost INF-LED is on.** This happens
  - in CSD mode (GSM dial-up connection): about 50 seconds after "Power On"
  - in GPRS mode: about 80 seconds after "Power On"
- **RI** lights, when the modem rings
- **DCD** - in CSD mode lights, when the modem has built a data link to remote station
  - in GPRS mode:
  IPT or BAER protocol: DCD lights, when the modem is logged to the GPRS-Bridge
  fixed IP address: DCD lights, when a remote modem has built a data link to the UniMod GSM4;
- **TxD** lights, when data is transferred from modem to target device (e.g. meter)
- **RxD** lights, when data is transferred from target device to modem

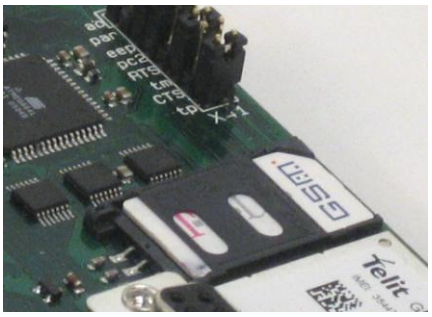
# 6 Installation Hints

The installation must be done in a way, that even in the case of cable break no dangerous voltages are applied to touchable parts of the device including the antenna. This can be accomplished e.g. by using cable ties and appropriate shortening of the cables.

For installation insert the Mini-SIM-Card correctly and tighten it by using the clamp of the card reader:



1) First open the clamp by shifting the slide in the arrow's direction (OPEN). After release you can open the lid and insert the SIM-Card as shown in the picture. Please note the position of the bevelled edge: it must point at the upper-right side. The golden contact pads have to point downwards.



2) Insert the card until the lid can be closed as shown in the picture. The slide must be movable in this position. Please note the position of the bevelled edge. Now move the slide against the arrow's direction until it clicks into place and the lid is locked. The SIM-Card is now ready to use.

3) After that connect the antenna to the UniMod GSM-4 using the FME plug.

**At last (important!) connect it to the supplying power.**

# 7 Programming the Modem

Before installing the modem it has to be programmed in order to meet the demands. The baud rate and data format for connecting the target device (e.g. meter) and the transmission mode and transmission rates (GSM) must be adjusted. On delivery the following default parameters are active:

| | |
|---|---|
| Data rate | 9600 Bit/sec (if not differently mentioned) |
| Data format | 7, Even, 1 (if not differently mentioned) |
| S0=1 | This parameter setting determines the number of rings (here 1) before automatic answering; for (CSD + GPRS) Mode set S0=5 |
| &D0 | This parameter determines how the modem responds when circuit 108/2 (DTR) is changed from ON to OFF during data mode. With setting 0 the modem ignores DTR. |
| E0 | This setting determines whether or not the modem echoes characters received from PC during command state. (0 = no echo) |
| Q0 V0 | Information response: numeric code |
| +IPR=19200 | Internal baud rate: **don't change this value!** |
| +CBST=7,0,1 | The modem selects the bearer service with automatic selection of the speed, asynchronous, non-transparent mode to be used when data calls are originated. |

This configuration allows for reading standard meters according to VDEW2 (IEC 1107 / IEC62056-21). If you want to change this parameters, you need a PC with terminal software UniModSet/MetcomTSet. Moreover experiences with the Hayes AT modem command set are very recommended. To establish connection between PC and modem you have to use:

A) the RS232-Service interface (standard PC port)

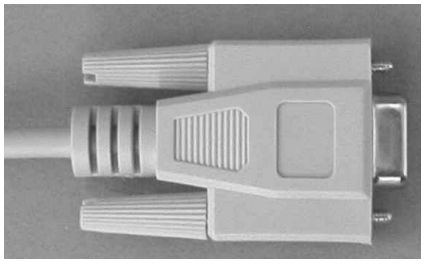
B) the parametering adapter with RS232 port (#9177)

C) the parametering adapter with USB port (#12683)

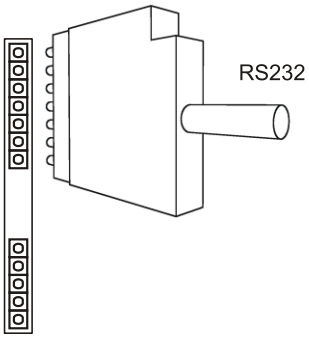
D) the converter (converter box or ConvBox) to adapt the interfaces

Description of the connection options:

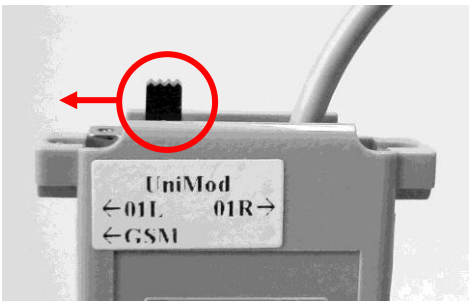
A) Service interface: Standard RS232 cable with 9 pole plug (standard RS232, Order No.: #4301).



B)

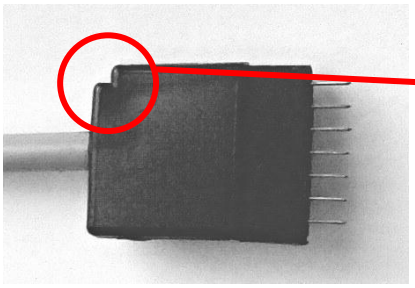
| | |
|---|---|
|  | The parametering adapter with RS232 port, which can be plugged instead of an interface module. This adapter can be ordered as accessory (Order No.: #9177). |

First disconnect the modem from the supply (**important!**) and remove the interface module..




Set the switch to position "←GSM", as shown in the picture.

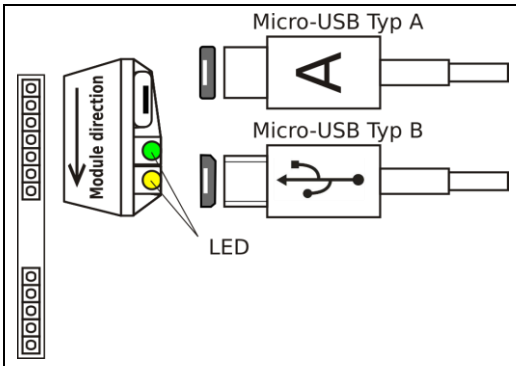
Insert the 7 pole plug of the parametering adapter instead of the interface module. The notch must point in direction of the LED's.



Then connect the 25 pole plug (RS232) to the PC port. **At last (important!) connect it to the supplying power.**

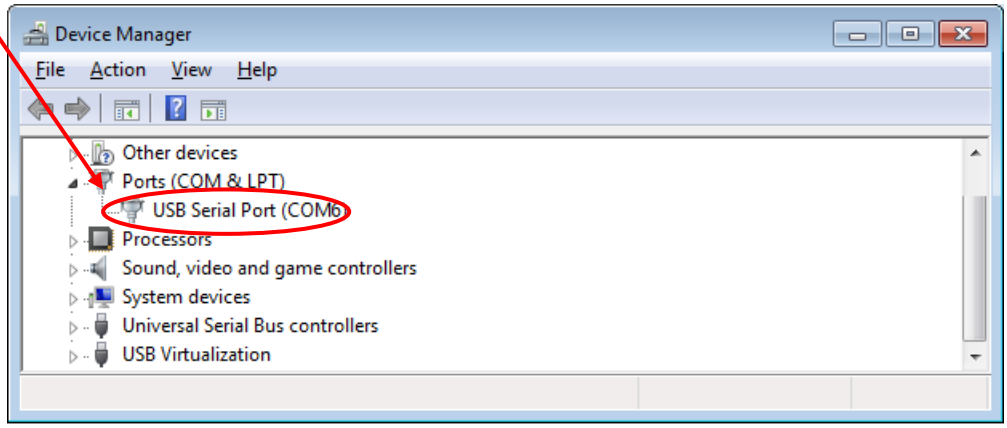
The UniMod GSM-4 can now be programmed with the software UniMod-Set.

C)




The parametering adapter with USB port (Micro-USB Type A or B), which can be plugged instead of an interface module. This adapter can be ordered as accessory (Order No.: #12683).

First connect the adapter with the USB port at the PC and wait for confirmation. The new COM-Port can be find in the device manager (control panel): **USB Serial Port (COM…)**




Now you have to set your terminal program to the fixed, local data rate and data format of the UniMod. (Default values: 9600 Bit/sec, 7,E,1) Use one of the AT commands (e.g. ATS0?, ATI, AT&V) in order to check whether the modem answers. If you see the answer on the screen, the interface is working correctly.

B) or C) After programming switch off the UniMod and insert the interface module carefully again.

► **Simply typing „AT“ does not result in an answer, because the modem is by default programmed not to send messages and echoes (Parameters ATQ1 and ATE0).**

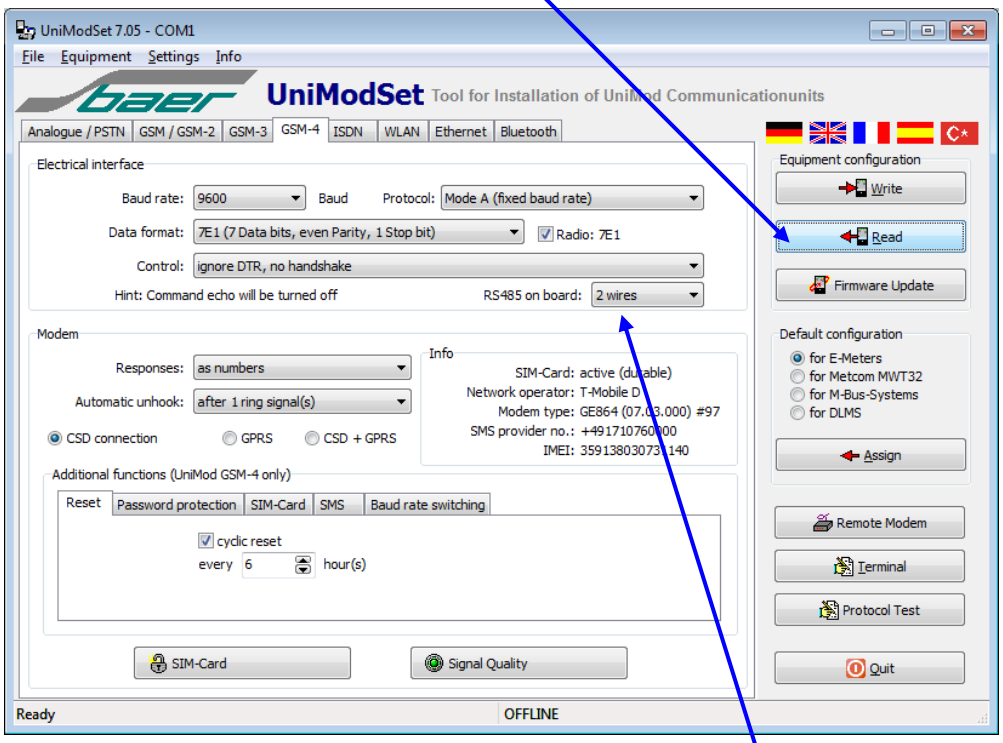
Following some examples of AT commands (the answers depend upon the respective firmware version):

| Request | Answer | Description |
|---|---|---|
| at&v | DTE SPEED : 19200<br>DTE FORMAT : AUTO<br>GSM DATA MODE : Not Transparent<br>AUTOBAUD : +IPRxxx00=NO<br>COMMAND ECHO : E0=NO<br>RESULT MESSAGES : Q1=NO<br>VERBOSE MESSAGES : V1=YES<br>EXTENDED MESSAGES : X1=YES<br>LINE SPEED : F0=autodetect<br>CONSTANT DTE SPEED : YES<br>FLOW CONTROL OPTIONS : &K3=HW bidirect.<br>ERROR CORRECTION MODE : RLP<br>CTS (C106) OPTIONS : &B2=OFF while disc.<br>DSR (C107) OPTIONS : &S3=PHONE ready->ON<br>DTR (C108) OPTIONS : &D0=ignored<br>DCD (C109) OPTIONS : &C1=follows carrier<br>RI (C125) OPTIONS : \R1=OFF dur. off-hk<br>C108/1 OPERATION : &D4=NO<br>POWER SAVING ON DTR : +CFUN:1=NO<br>DEFAULT PROFILE : &Y0=user profile 1 | Inquires current configuration |
| ati4 | GE864-QUAD | Requests product information |
| at+cpin? | +CPIN: code<br>OK | SIM-Card inquiry<br>(ERROR: no/faulty SIM-Card<br>code = SIM PIN: waiting for PIN<br>code = READY: PIN active) |
| at+cpin=n | OK | Enter PIN, switches modem active.<br>e.g. AT+CPIN="1234" (if PIN is 1234) |
| at+clck= "SC",0,"n" | OK | Disable PIN lock after power off. (n = PIN)<br>e.g. AT+CLCK="SC",0,"1234"<br>**Attention: First enter PIN using AT+CPIN.** |
| at+cops? | +COPS: 0,0,"operator"<br>OK | Inquire bearer service. Will be shown only, when SIM-Card is active and antenna connected. |
| at+cops=? | +COPS:<br>(2,"T-Mobile D",,"26201"),<br>(3,"Vodafone D2",,"26202"),<br>(3,"E-Plus",,"26203"),<br>(1,"o2 - DE",,"26207"),,<br>(0-4),(0,2) | List of available bearer services. |
| at+cbst= s,n,e | OK | Choose transmission mode:<br>speed s=<br>0 - autobauding (automatic selection of the speed, factory default)<br>1 - 300 bps (V.21)<br>2 - 1200 bps (V.22)<br>3 - 1200/75 bps (V.23)<br>4 - 2400 bps (V.22bis)<br>6 - 4800 bps (V.32)<br>7 - 9600 bps (V.32)<br>14 - 14400 bps (V.34)<br>65 - 300 bps (V.110)<br>66 - 1200 bps (V.110)<br>68 - 2400 bps (V.110 or X.31 flag stuffing)<br>70 - 4800 bps (V.110 or X.31 flag stuffing) |

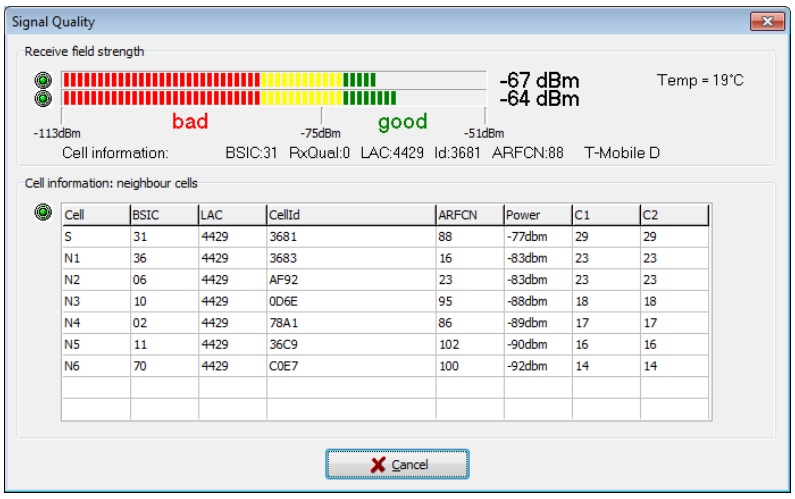
| Request | Answer | Description |
|---|---|---|
| | | 71 - 9600 bps (V.110 or X.31 flag stuffing)<br>75 - 14400 bps (V110 or X.31 flag stuffing),<br>name n=0 for asynchronous mode,<br>element e=0 for transparent or e=1 for non transparent transmission<br>e.g.. at+cbst=0,0,1 (for autobauding, asynchronous mode, non transparent) |
| at&f | OK | Set all parameters to factory defaults. |
| ats0=n | OK | This parameter setting determines the number of rings (0 to 255) before automatic answering.<br>e.g. ats0=1 (Modem answers after first ring)<br>**Attention: s0=0 disables automatic answering.** |
| ats0? | 001<br>OK | Returns the number of rings before automatic answering. |
| at&w | OK | Saves the current parameter setting in the user-defined profile. This settings are active after every resumption of power supply. |

Example: Programming UniMod GSM-4

- Insert the Mini-SIM-Card
- Establish connection PC to modem (e.g. using the RS232 cable)
- Switch on UniMod GSM-4, wait 50 to 80 sec: till first INF-LED is on
- Start the UniModSet software
- Read the equipment configuration:




- Adjust the parameter
  Hint: Mind to set the functionality of the internal RS485 interface correctly !
- Write the configuration; after it: power off and on
- Enable or disable the PIN via SIM-Card function
- Check the signal quality and the internal temperature: possible only in CSD mode:



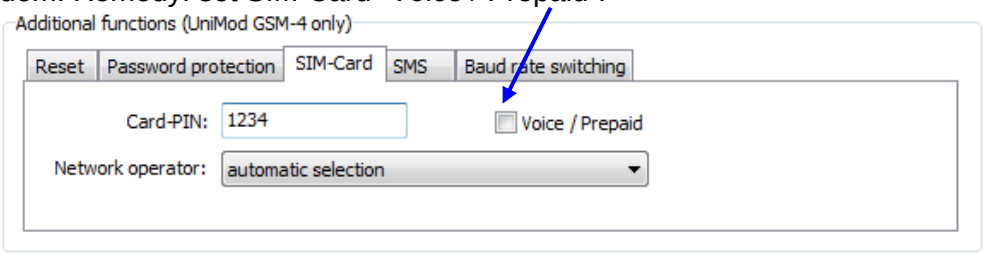
## 7.1 Testing the Connection

For easier diagnosis of connection problems it is possible to display extended result codes for incoming call indication. In order to do this the following steps are necessary:

- Activate result codes: Enter „ATQ0“, Modem reply: OK.
- Activate extended result codes: „AT+CRC=1“, Modem reply: OK. („AT+CRC=0“ switches the extended codes off)
- Call UniMod GSM-4 via data service (use appropriate telephone number). Watch incoming call using terminal program.
  Possible messages:

**+CRING: REL ASYNC**
incoming call has been correctly transmitted. That’s OK.

**+CRING: VOICE**
incoming call has been transmitted via „voice“ mode. Call rejected by modem. Remedy: set SIM-Card “Voice / Prepaid”:




**+CRING: FAX**
incoming call has been transmitted via „fax“ mode. Call rejected by modem.

## 7.2 Parity Error (7E1)

Depending on certain circumstances (software configuration, hardware configuration of the PC, connection of the modem to the PC, operating system,...) the communication software of your application might issue a message like: wrong parity. In the most cases a switch of the UniMod GSM-4 data format from "7E1" to "8N1" is able to bring fast and easy help. Using this configuration data retrieval from most meters is possible in the format "7E1" and "8N1".

When data format „7E1“ is used the correct parity can be transmitted automatically (Set tick ☑ Radio: 7E1 ) or not (Setting ☐ Radio: 7E1) .

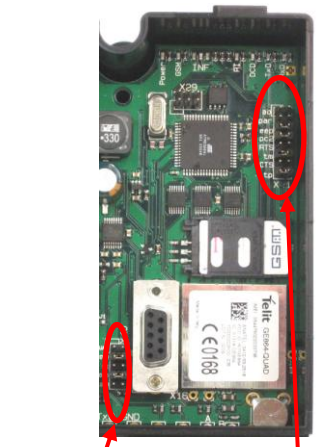
If there are any further questions we are happy to help you.

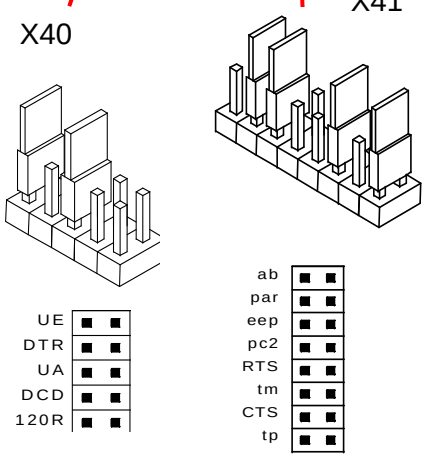
# 8 Additional Functions

## 8.1 Reset

Optional it is possible to activate the time-controlled modem-reset. With this turned on the modem (GE864-Module) is regularly deactivated by the internal firmware. After the reset it logs on to the PLMN (Public Land Mobile Network) again. Activating is recommended when the field-strength of the used GSM-net is very low. This functionality can be enabled using the UniModSet/MetcomTSet program.

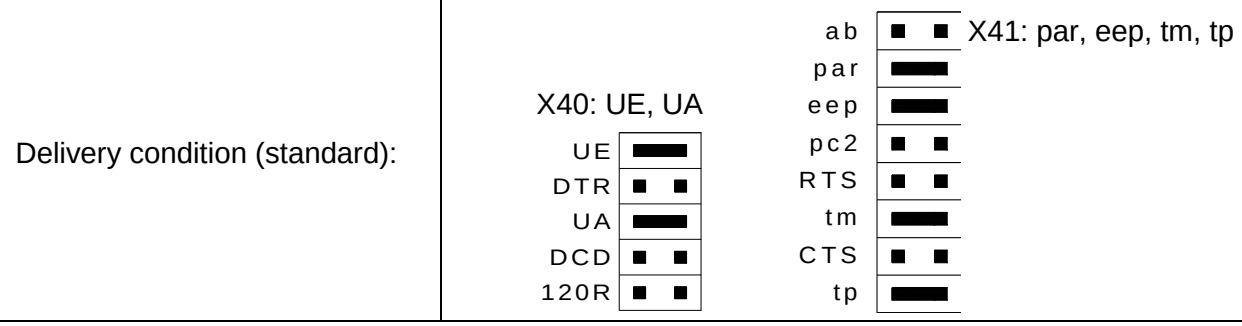
The functionality is activated by the switches below the LEDs.






| Jumper | Function |
|---|---|
| ab | Reserved, do not use ! |
| par | Closed: internal programming by AT commands: the internal CPU can optionally send the AT commands to the GE864 module. |
| eep | Closed: Allow programming; changing of parameters by UniModSet program allowed.<br>Open: parameter memory (EEPROM) is write protected. |
| pc2 | Must be open always, used for internal processing. |
| RTS + CTS | Signals from interface module are connected with terminals 4 and 5.<br>RS232: 4:=CTS, 5:=RTS<br>RS485/4 wires: 4:=Y+, 5:=Z-<br>**Keep tp and tm open in this case!** |
| tm + tp | Internal 20mA interface is connected with terminal 4 (+) and 5 (-).<br>**Keep RTS and CTS open in this case !** |
| | |
| UE/DTR | Connect either RS232 DTR signal or control input UE to terminal 9.<br>The UE input serves for sending a SMS or triggering automatic baud rate adaption. |
| UA/DCD | Connect either RS232 DCD signal or control output UA to terminal 10. |
| 120R | Termination for RS485: 120Ohm |

Delivery condition (standard):



## 8.2 Signal Quality

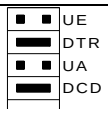
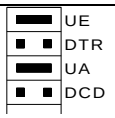
When the modem operates in CSD mode (!) the INF-LEDs' show the current field strength of the GSM signal. When the display is updated (every three seconds) the first INF-LED flickers shortly. The second and third INF-LED display the signal quality. Encoding see table below. (■: LED on / □: LED off):

| INF-LED | Signal level | Description |
|---|---|---|
| ■□□ | -99dBm to -113dBm | Bad signal quality, transmission may be disturbed. |
| ■■□ | -83dBm to -97dBm | Low signal quality; |
| ■□■ | -67dBm to -81dBm | Medium signal quality; |
| ■■■ | -51dBm to -65dBm | Good signal quality; |
| ■□□<br>■■■<br>■□□<br>■■■<br>or<br>■□□<br>□■■<br>■□□<br>□■■ | Undefined<br>(flashing) | No signal quality information available;<br>Check antenna |
| ■□■<br>■■□<br>■□■<br>■■□ | Undefined/GPRS<br>(flashing) | Modem logged in GPRS-Network: second and third INF-LED flash alternately. In GPRS mode field strength can not be displayed. |
| ■□■<br>■□■<br>■□■<br>■■□<br>■■□<br>■■□<br>■□■<br>■□■<br>■□■ | from version 81 up<br><br>-99dBm to -113dBm<br>-83dBm to -97dBm<br>-67dBm to -81dBm<br>-51dBm to -65dBm | After every reset: check for signal quality (<u>once only</u>):<br>Bad signal quality: flashing every 4 seconds<br>Low signal quality: flashing 1Hz<br>Medium signal quality: flashing 2Hz<br>Good signal quality: flashing 3Hz |

► **During the connection and 60 seconds after it is the signalling disabled!**

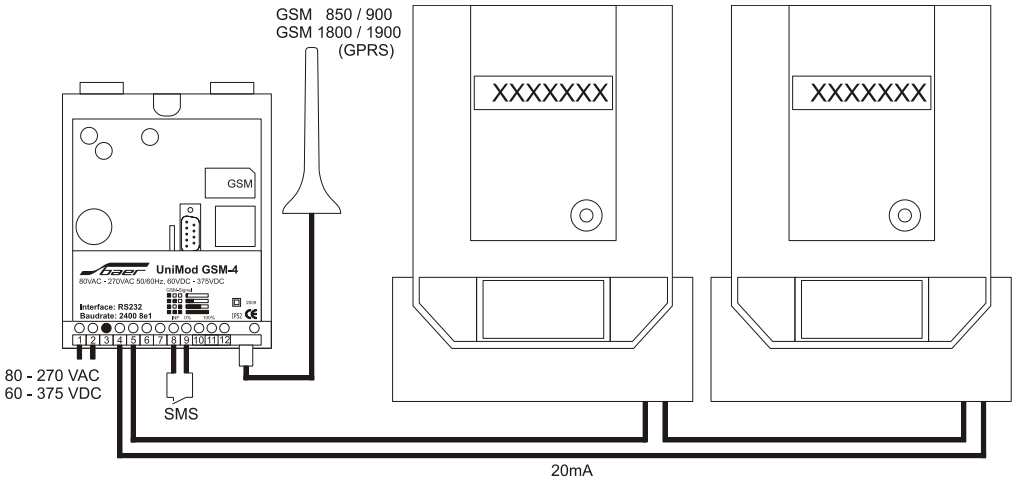
## 8.3 SMS Function

Optional it is possible to activate SMS. This function is monitoring of on/off state changes of SMS input (terminals 8/GND and 9/UE), possible in CSD mode and GPRS mode:

| Interface RS232: Function DCD/DTR | SMS: Function UE/UA, Standard |
|---|---|
|  |  |



Example: 20mA interface with two meters and SMS input (contact):




The modem tries to send an SMS at every change of contact (open/close). Maximum rate is one SMS every 2 to 3 seconds.

Connect: If the connection (CSD mode) is active, the SMS will be send after a disconnect.

GPRS: If the GPRS mode is active, at the first change the modem to the CSD mode: the SMS will be send after these change.

Note: “SMS function” doesn’t work at the same time with “Automatic baud rate adaption” (see page 22).

► **In some cases it is neccessary to enable the SMS functionality at the network provider. In order to test a SIM-Card it proved useful to insert it into a mobile phone and then try to send a SMS.**

## 8.4 Automatic Baud Rate Adaption

Using the “Automatic Baud Rate Adaption” functionality the UniMod GSM-4 can determine automatically the baud rate that is used by the connected meter (alternatively to “SMS Function”). This is only possible with VDEW2 meters that can be read using the IEC1107 / IEC62056-21 protocol. The data format (7E1, 8N1 or 8E1) must be the same.

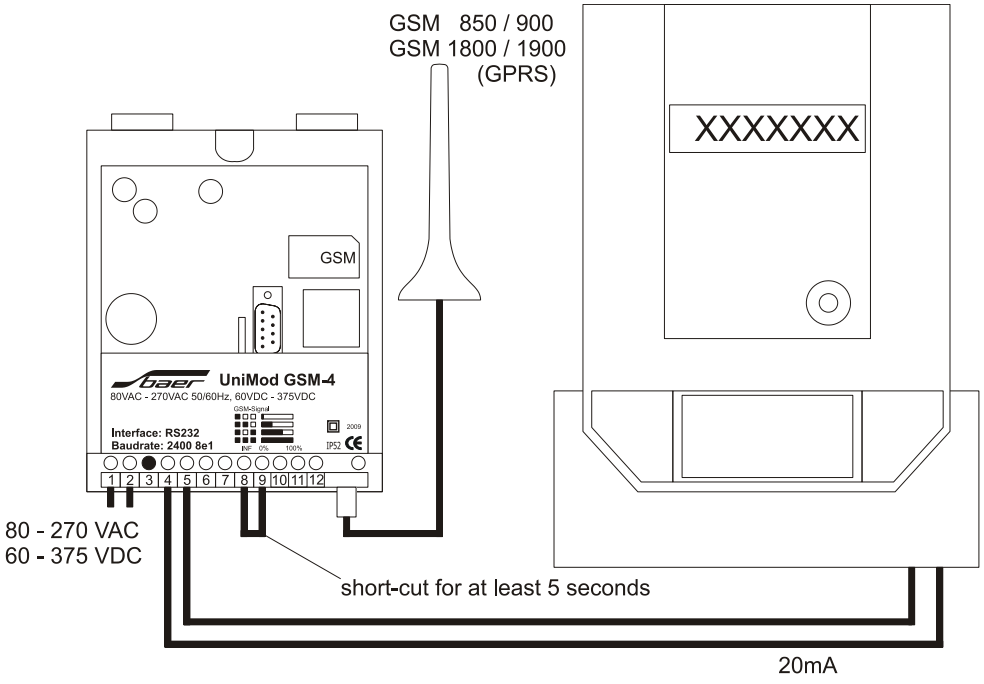
If triggered the meter is accessed using different baud rates between 300 and 19200 Bd. When the meter answers the successful baud rate is saved. This baud rate is the restored after each power outage.

In order to use “Automatic Baud Rate Adaption” the jumpers UE and UA at the UniMod GSM-4 must be set as shown below to use the control input UE (terminal 8/GND and 9/UE):

| Control input enabled: Function UE/UA |
|---|
| |



Example:



To trigger the automatic baud rate detection the control input UE (terminals 8/GND and 9/UE) must be short-cut for at least 5 seconds. After that the leftmost INF-LED flashes three times and the detection is started.

The UniMod GSM-4 checks these baud rates in order: 19200, 9600, 4800, 2400, 1200, 600 und 300 Bd. Before the baud rate is switched the left INF-LED flashes three times. At every try the modem sends the string „/?!<CR><LF>“ to meter and waits two seconds for the answer. If it gets a valid answer, this baud rate is chosen for further communication and saved. All three INF-LEDs blink in this case like this:

| INF-LED | Function | Baud rate |
|---|---|---|
| ■■■<br>□□□<br>■■■<br>□□□ | Flashing | 1 time: 300 Baud 2 times: 600 Baud<br>3 times: 1200 Baud 4 times: 2400 Baud<br>5 times: 4800 Baud 6 times: 9600 Baud<br>7 times: 19200 Baud |

**Operating status after baud rate detection:**

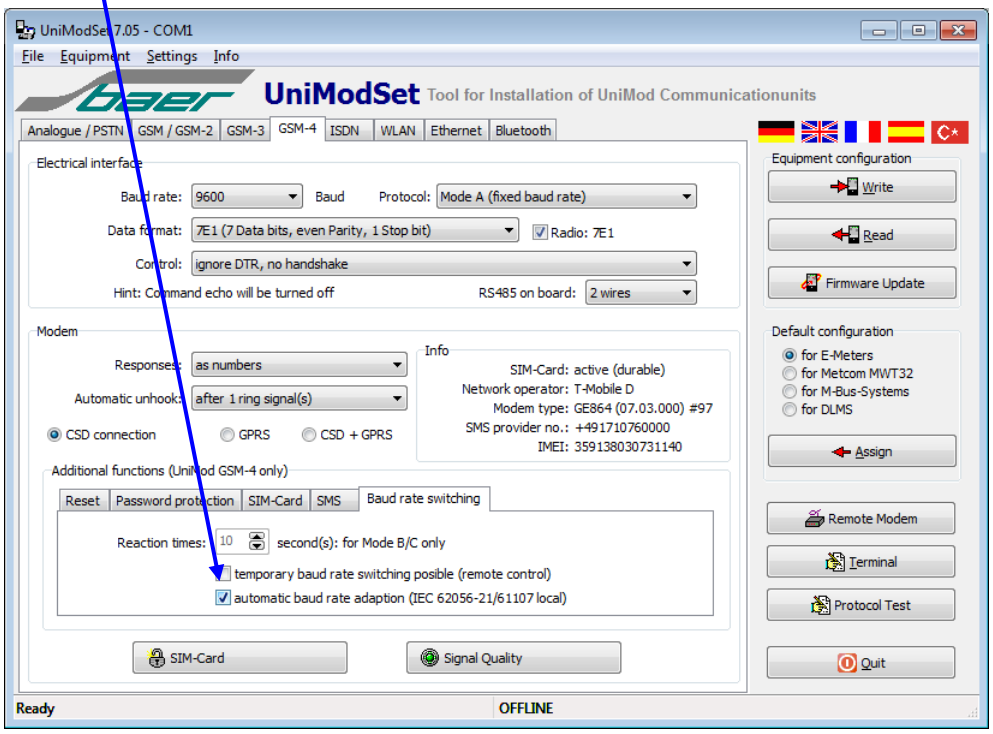
- In GPRS mode a „warm restart“ is done. Meter can be read after 80 seconds.
- In CSD mode (dial-up connection) the modem pauses for 10 seconds. After that the meter can be read.

  If no matching baud rate is found the originally programmed baud rate remains active.

  After completion of baud rate detection the jumper at terminals 8/GND and 9/UE should be removed, else it will be performed after every power outage. To start the detection process immediately after another one has been performed then the jumper must be removed for at least 5 seconds and after that closed for 5 seconds again.

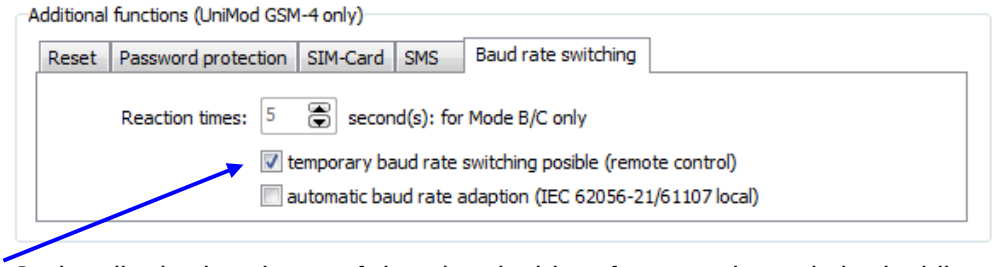
► **Important: Only one VDEW2 (IEC1107 / IEC62056-21) meter must be connected to UniMod GSM-4 while the detection process is running ! Disconnect all meters except one before you start the baud rate detection. Before reconnecting the other meters all must be set to the same baud rate as the first one uses. At all meters disable baud rate switching as defined in IEC1107 Mode A !**

You can enable/disable these functionality using function “automatic baud rate adaption (IEC 62056-21/61107 local) in the UniModSet program. See below:




Note: Function “Automatic baud rate adaption” doesn’t work at the same time with “SMS function”

## 8.5 Temporary Baud Rate Switching




Optionally the baud rate of the electrical interface can be switched while a request is running, without the necessity to hang up the connection. This allows to read meter with different baud rates and/or data formats (7E1, 8N1 etc.).

The command for switching is: **{[%]}=x,y***

The first number (**x**) defines the baud rate, the second one (**y**) the data format. The modem switches after the ***** character is recognized without acknowledgement. These parameters are possible:

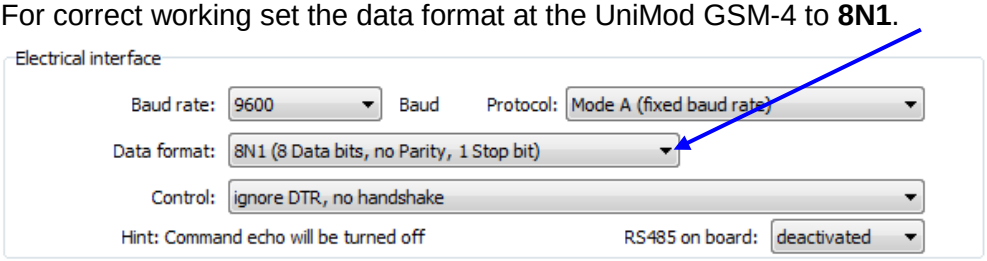
| | |
|---|---|
| **x =** 0: 300 Baud<br>1: 600 Baud<br>2: 1200 Baud<br>3: 2400 Baud<br>4: 4800 Baud<br>5: 9600 Baud<br>6: 19200 Baud | **y =** 0: 7E1<br>1: 8E1<br>2: 8N1 |

Example: {[%]}=5,0* := 9600 Baud, 7E1
{[%]}=3,1* := 2400 Baud, 8E1

After hang-up (change to OFFLINE state: DCD-LED off) the saved (old) baud rate and data format is restored (for GPRS connection after a reset only).

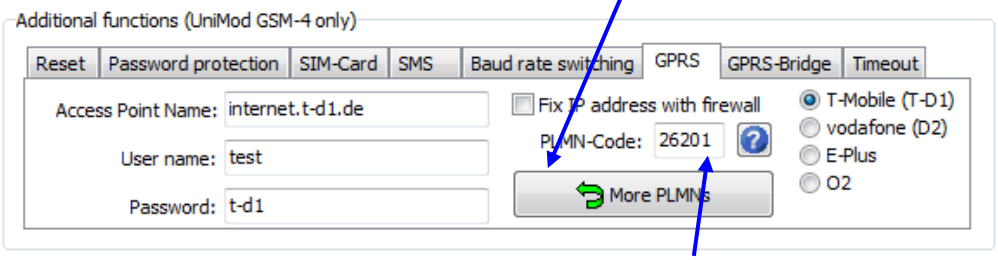
► **The character sequence {[%]} has been chosen because it is quite exotic and should never appear in regular communication to meters.**

Note: For correct working set the data format at the UniMod GSM-4 to **8N1**.

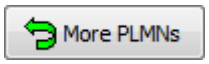


## 8.6 GPRS: More PLMNs

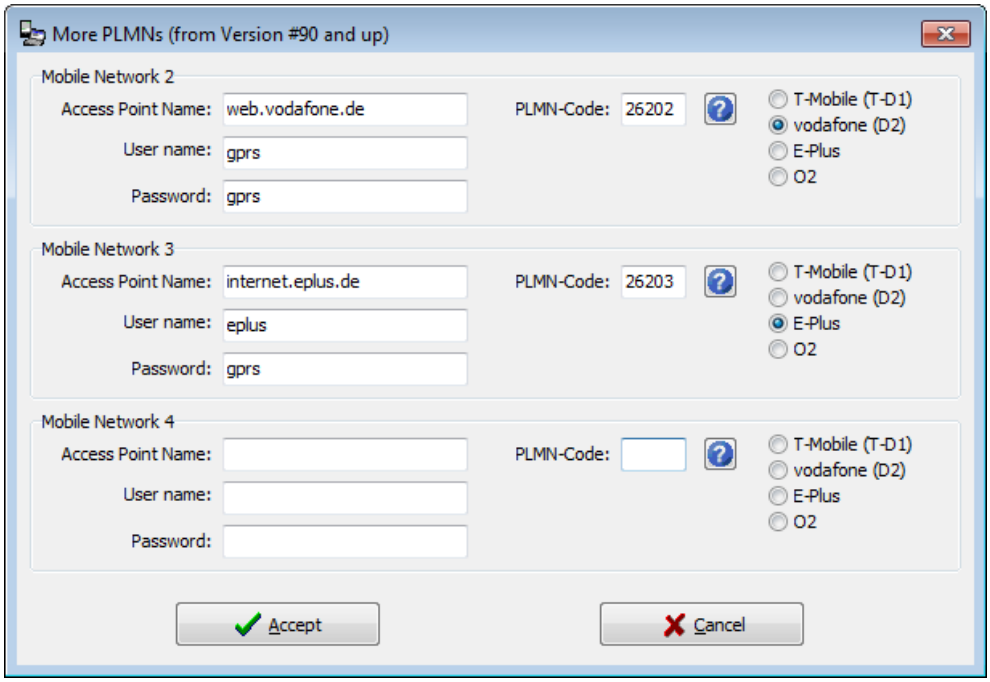
Since the firmware version #90 is possible to set more mobile network providers (PLMN: Public Land Mobile Network):



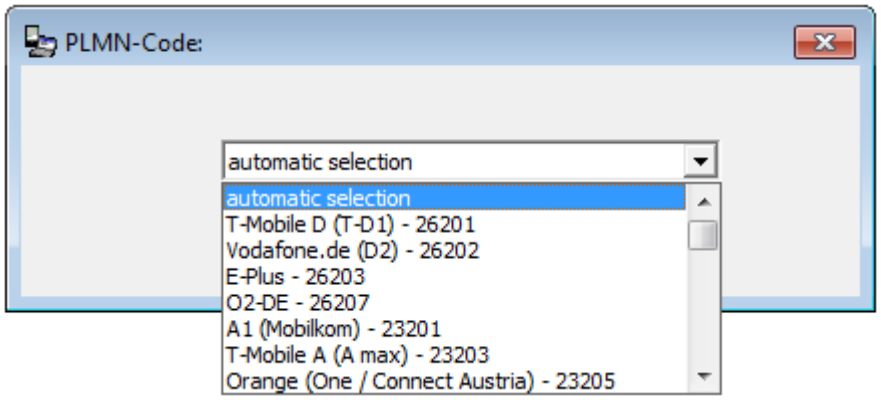

When the field “PLMN-Code” is empty, the UniMod GSM-4 uses the first available mobile network.




After clicking the “More PLMN’s” button, further mobile networks can be entered:

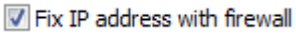


After clicking the question mark a help window will be activated:

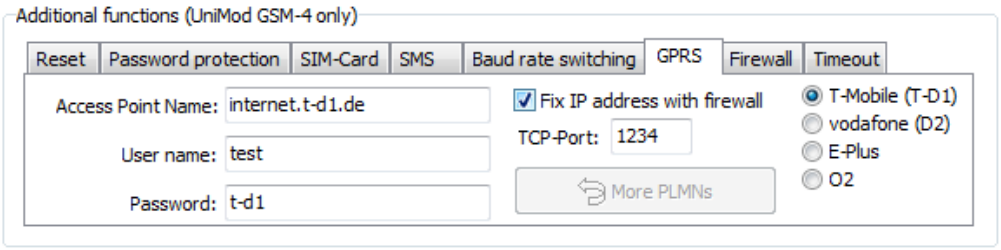



In this menu you find the correct PLMN-Code (Public Land Mobile Network) for many mobile service providers.

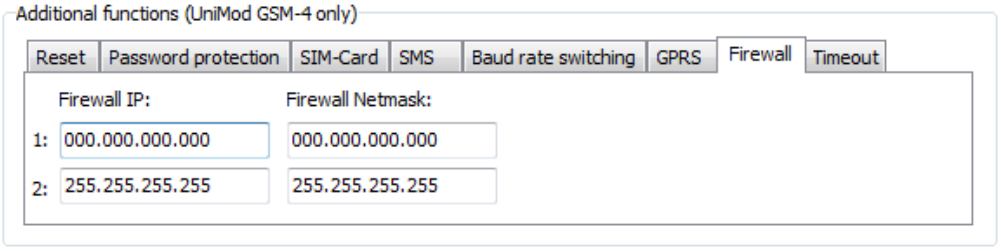
## 8.7 GPRS: Fixed IP Address




Settings for fixed IP address and network port (incl. firewall):




Settings for firewall:

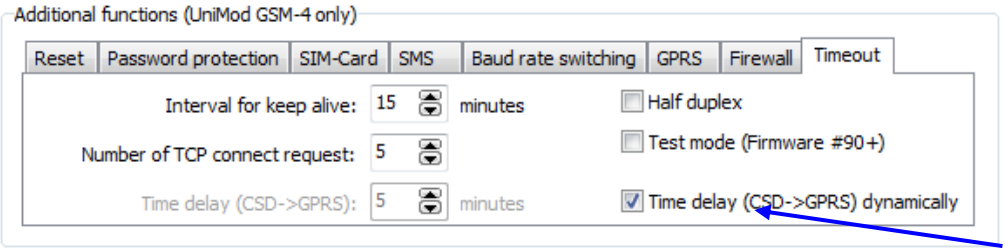



Examples: Firewall = 0.0.0.0 and network mask = 0.0.0.0: connection to all IP addresses is possible (accept all);

Firewall = 192.168.1.1 and network mask = 255.255.255.255: only connection to the IP address 192.168.1.1 is possible;

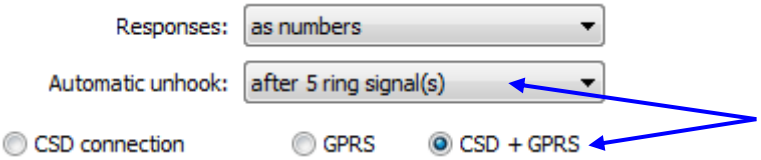
Firewall = 192.168.1.0 and network mask = 255.255.255.0: connection to the IP addresses 192.168.1.0 to 255 is possible;

## 8.8 GPRS: Dynamically Timeout



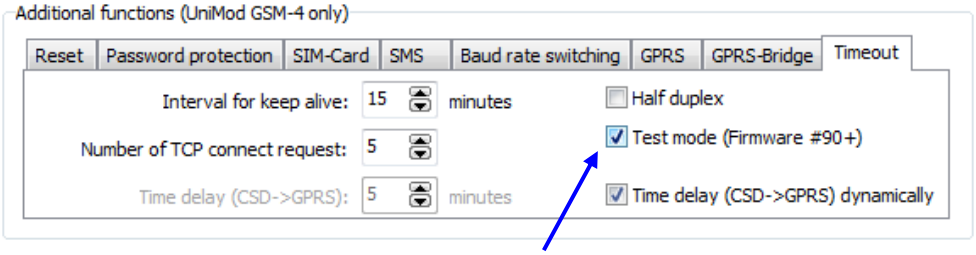

Dynamically time delay between CSD and GPRS log on (5, 15, 60Min, 3, 12, 24hours delay by errors).

## 8.9 CSD + GPRS Mode



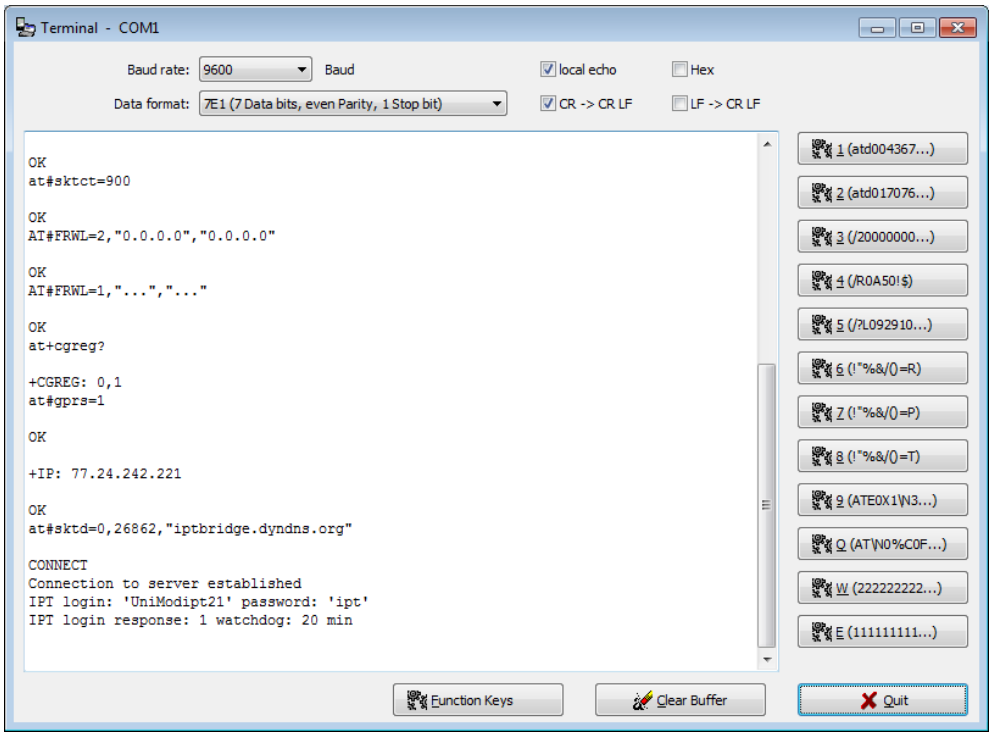

For CSD + GPRS Mode set the number of rings to 5 (for correct GPRS disconnect). After a non-successful attempt (without CONNECT and DCD-LED off) the next CSD call can now be connected in the following 5 minutes.

## 8.10 GPRS: Test Mode




Test mode

Since the firmware version #90 is possible to activate a test mode: shows information about log on to the GPRS network via service interface:




Note: use only for testing, deactivate please this function after the tests!

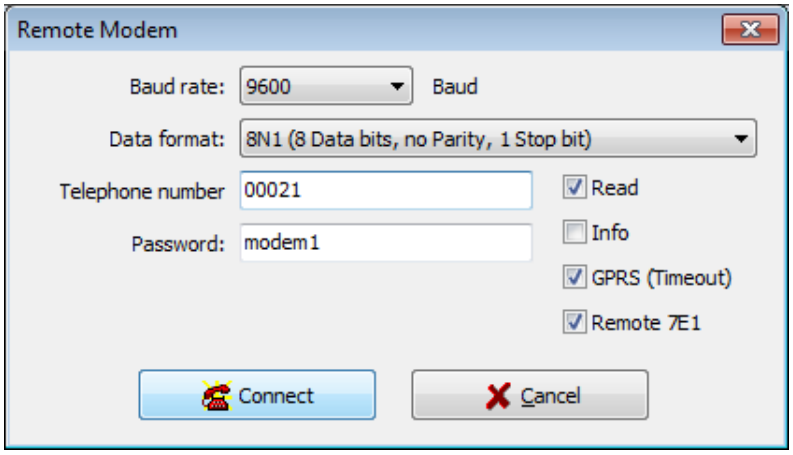
## 8.11 Firmware Update (Option)

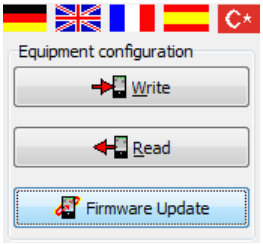
Firmware Update

Option: Since firmware version #90 is possible to do a firmware update via local interface (e.g. service RS232) or via mobile (GSM/PSTN modem or GPRS) connection.

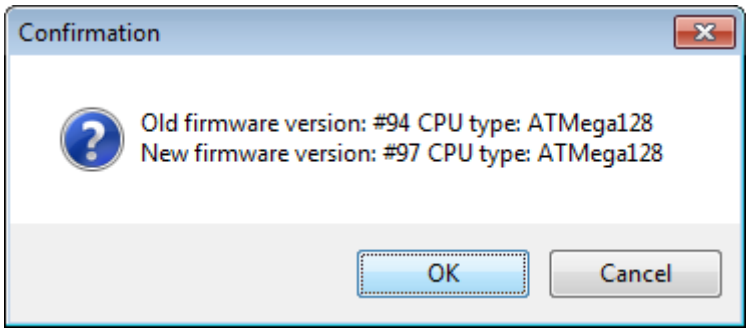
Local: When doing a firmware update via RS232 service interface it is advisable to remove or disable the SIM-Card in the modem.

Mobile: When doing a firmware update remotely via GSM/PSTN/GPRS connection the data format must be set to 8N1 (set option “Read”, see picture below). If the remote modem is set to 7E1 then the option “Remote 7E1” must be enabled also:



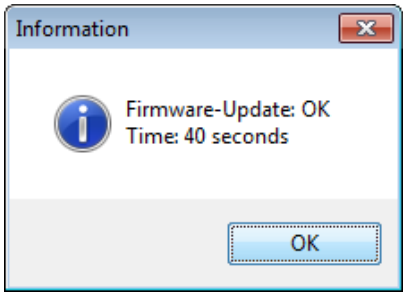




After clicking button “**Firmware Update**” the current parameter setting is read from remote modem. Then the file containing the desired firmware can be selected (e.g. from hard disk). The program checks now if the firmware of the remote device can be updated. If yes, this message will appear:




A click on button “OK” starts the update.

On success the following message appears:




Duration of transmission:
Local := ca. 40 seconds; CSD / GPRS:=ca. 5 minutes
After that the modem will perform a reset and boot the uploaded firmware.

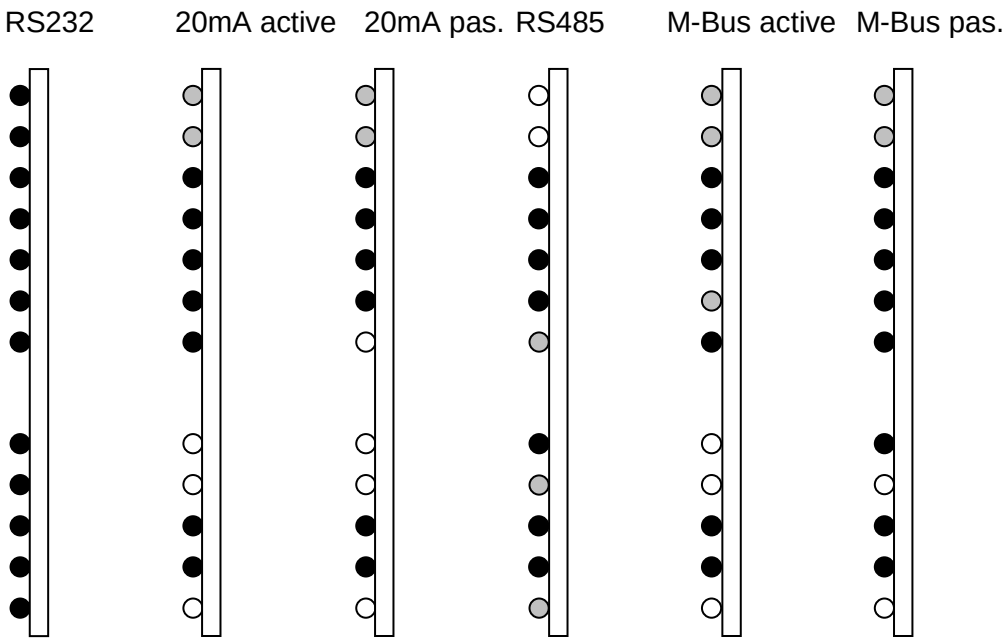
# 9 Technical Data

| | | |
|---|---|---|
| Housing: | Wall-mounted housing according to DIN 43861-2 | |
| Degree of protection: | IP52 (IEC) | |
| Dimensions: | W = 105mm,<br>H = 179mm<br>D = 72mm | |
| Protection class: | 2 | |
| RoHS compliant: | yes | |
| Supply voltage: | 80VAC to 270VAC (50/60Hz) or 60VDC to 375VDC<br>Optional: 10VDC to 36VDC (0,8A) or 20VDC to 72VDC | |
| Power consumption: | 4 VA max. | (depends upon supply voltage, kind of interface module and operating status of transmission unit) |
| Temperature range: | -40°C to +75°C (operational)<br>-40°C to +90°C (storage temperature) | |
| Interfaces: | Three internal interfaces:<br>- CS (20mA, current loop) active (can supply 4 meter max.) or passive<br>- RS485 2 wires<br>- RS232 (RxD, TxD, DTR, DCD, GND; RTS and CTS are internally bridged); for service<br>Optionally one extra interface by pluggable module:<br>- RS232 (supports signals RxD, TxD, RTS, CTS, GND)<br>- CS (20mA, current loop) active (can supply 4 meter max.) or passive<br>- RS485 2 wires<br>- RS485 4 wires<br>- M-Bus active: can supply 10 devices max. (optionally 25) | |
| Service interface: | RS232 (RxD, TxD, GND, DTR, DCD), RTS and CTS bridged | |
| SMS input (UE): | 12VDC (in place of DCD signal) for potential-free contact | |
| Display: | LED's: Power, GSM, 3 INF, RI (Ring), DCD, TxD, RxD | |
| GSM unit: | Telit GE864-QUAD (V2) module with 3V Mini-SIM-Card interface<br>Fully type approved conforming with R&TTe directive<br>CE, GCF, FCC, PTCRB, IC, Anatel | |
| SIM-Card: | Mini-SIM (2FF, Standard-SIM), 3V, 25mm × 15mm | |
| Approval: | CE0168 or CE0889 | |
| GSM band: | Quad-Band EGSM 850/900/1800/1900 MHz | |
| GPRS: | Multi-slot class 10: downlink 4 timeslots, uplink 2 timeslots<br>Mobile station class B<br>M2M-Transmision: DIN 43863-4 (IP-Telemetry) or BAER-Protocol | |

| | |
|---|---|
| Transmission rate remote modem to UniMod: | Up to 9600 bit/sec (V.32 / V.110), 7 / 8 data bits, asynchronous, non-transparent |
| Transmission rate UniMod to connected device: | 300 to 19200 bit/sec (fixed baud rate)<br>optionally: mode B and C according IEC61107 (IEC62056-21) with baud rate switching (300 baud to “fast” baud rate) |
| Data format: | 7E1, 8N1, 8E1 |
| Output power: | 2W (Class 4) for 850/900 MHz<br>1W (Class 1) for 1800/1900 MHz |
| Sensitivity: | -107 dBm (850/900 MHz)<br>-106 dBm (1800/1900 MHz) |
| Antenna jack: | 50Ω FME (m) |
| Software-Interface: | Hayes Standard-AT, GSM 07.07, GSM 07.05 |
| References: | European Telecommunications Standards Institute, www.etsi.org |
| Extent of delivery: | - UniMod GSM-4 including interface module as ordered<br>- Standard antenna: magnetic foot antenna with FME (f), 0dB, cable: 2,5m RG174<br>- Operation manual |
| Accessories: | - RS232 cable (#4301)<br>- Parametering adapter with RS232 port (#9177)<br>- Parametering adapter with USB port (#12683)<br>- Antenna for special purposes<br>- Additional interface modules<br>- Suspension eye (#9141)<br>- Software UniModSet<br>- AT Commands Reference Guide |

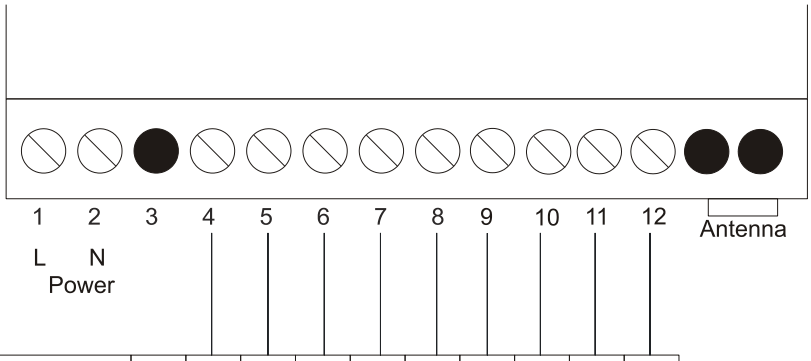
# 10 Inserting the Interface Modules

When inserting the interface modules their component side must be at the *left* side and wired according the picture. In the following sketch the components are at the left side.




- ● Pin used, connected
- ◎ Pin used, not connected
- ○ Pin not used

# 11 Terminal Block




Interfaces:

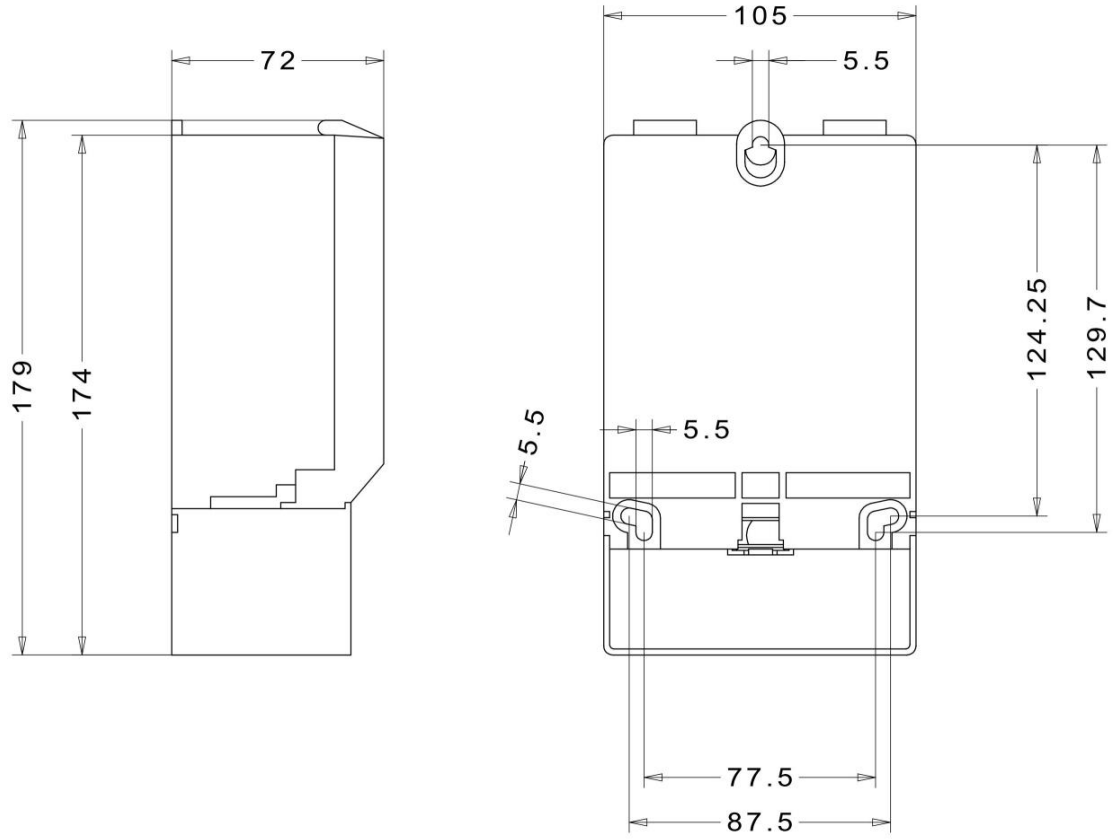
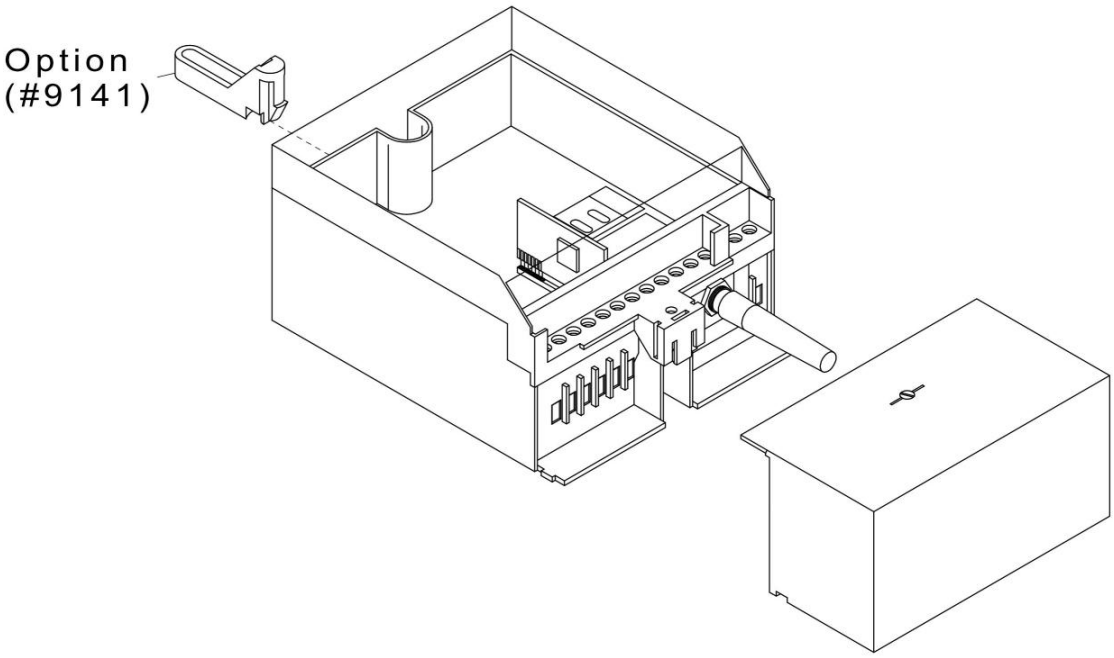
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| RS232 (Module) | | CTS | RTS | RxD | TxD | GND | DTR | DCD | | |
| 20mA active (Module) | | | | + | - | | | | | |
| 20mA passive (Module) | | | | - | + | | | | | |
| 20mA active (on Board) | | +(tp) | -(tm) | | | | | | | |
| RS485 2-wire (Module) | | | | B- | A+ | | | | | |
| RS485 4-wire (Module) | | Y+ | Z- | B- | A+ | | | | | |
| M-Bus active/passive (Module) | | | | - | + | | | | | |
| RS485 2-wire (on Board) | | | | | | | | | A+ | B- |
| SMS | | | | | | GND | UE | | | |

(RS485: Y - Z: Output / B - A: Input)

Note: it is possible to activate the DTR input as control input (UE) for SMS. To enable this the jumper must be set from DTR to UE (see chap. 8.3) and the SMS functionality must be turned on using the UniModSet/MetcomTSet program.

Optional power supply (12VDC / 24VDC):

| Terminal | Voltage |
|---|---|
| 1 | +10VDC to +36VDC |
| 2 | 0VDC (GND) |

# 12 Dimensions

Wall-mounted housing according to DIN 43861-2